

C-130 Avionics Modernization Program (AMP)

The purpose of the C-130 Avionics Modernization Program (AMP) is to lower the cost of ownership of the U.S. military's C-130 fleet, while complying with the Air Force Navigation and Safety Master Plan, required navigation performance requirements, and other applicable Global Air Traffic Management requirements. This will be done through a cockpit modernization program that replaces aging, unreliable subsystems, and adds equipment necessary to meet navigation and safety and Global Air Traffic Management requirements. New equipment is intended to lower the cost of ownership by reducing cockpit crew manning as well as increasing aircraft reliability, maintainability, and sustainability. The C-130 AMP is intended to provide an improved precision airdrop capability for the combat delivery fleet, meet Night Vision Imaging System requirements, and improve the C-130's precision approach and landing capability. This program provides the interfaces necessary to integrate real time information in the cockpit. A standard cockpit layout is planned allowing pilots to be trained to fly in any AMP aircraft cockpit and to undergo mission qualification when reaching a specific unit.

In addition, selected Special Operations Forces aircraft will undergo additional modification under the C-130 AMP/Common Avionics Architecture for Penetration (CAAP) program. A Test Planning Working Group has been established to provide a forum for test organizations to participate in the C-130 AMP/CAAP test planning process. The using commands and the Air Force Operational Test and Evaluation Center will provide crew members to support ground tests and flight tests during combined developmental test/operational tests and dedicated OT&E.

The LFT&E program, managed by the program office, will develop a C-130 fleet-wide system-level vulnerability analysis. The program will include a vulnerability analysis and ballistic testing of AMP electronic systems and those systems it directly affects, together with mission abort vulnerability analyses.

The Milestone B decision resulted in the C-130 AMP contract in July 2001. Contractor ground tests will be conducted at Boeing facilities in San Antonio, Texas, and Long Beach, California. Following a series of flights at the contractor facility, initial prototypes will transition to Edwards Air Force Base, California, for the start of formal developmental test and evaluation. Developmental test and evaluation flight tests will be accomplished by a combined government/contractor integrated test team. Air Force Operational Test and Evaluation Center personnel will participate as part of the government contingent.

TEST & EVALUATION ACTIVITY

The program is in the System Design and Development phase. Low-rate initial production for the combat delivery and CAAP aircraft is planned for FY06. The full-rate production decisions are planned for FY08 and FY09, respectively. An LFT&E integrated team and a test plan working group have been created to formulate the specifics of the LFT&E program and the Test and Evaluation Master Plan.

The successful testing of AMP components across a broad range of aircraft configurations and mission requirements will continue to be a significant challenge. The concept is feasible; however, it is essential that the various users (eight different commands) commit to a unified fleet management approach for the modification of all



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AIR FORCE PROGRAMS

aircraft. Fleet management of more than 700 aircraft is one of the keys to success. A tentative plan calls for some aircraft being retired, some moved from one unit to another to manage structural life, some sent to depot, and others used for test purposes. In addition, concurrent development of different Mission Design Series modifications will add risk to the technical developments and to the schedule.

The following table shows the different Mission Design Series (MDS) of the C-130s to be modified and some of the special test requirements applicable to them:

C-130s and Special Test Requirements by MDS

MDS	Nomenclature	Special Tests
C130E/H/H1/H2/H3	Combat Delivery	Global Air Traffic Alert and Collision Avoidance System, Terrain Awareness Warning System, Night Vision Imaging System, Flight Management System
AC-130H/U	Gunship	Gunfire Accuracy, Enhanced Situational Awareness, Defensive Systems
EC-130H	Compass Call	Mission Unique
HC-130N/P	Combat Rescue	Mission Unique
MC-130E	Combat Talon I	Terrain Following/Terrain Avoidance Navigation
MC-130H	Combat Talon II	Terrain Following/Terrain Avoidance Navigation, Enhanced Situational Awareness, Defensive Systems
MC-130P	Combat Shadow	Mission Unique
LC-130H	Ski	Mission Unique

TEST & EVALUATION ASSESSMENT

The entire C-130 AMP/CAAP program has been restructured due to funding changes and a renewed emphasis on the missions of the Special Operations Forces aircraft. The restructuring proposes to accelerate the previously planned risk reduction effort (18 months of flying the APN-241 radar in a Special Operations Forces Combat Talon I aircraft with testing at a government range) for feasibility studies on the radar, new data processing algorithms, and enhanced situational awareness features for terrain following/terrain avoidance missions with low probability of intercept. There should be less risk to the CAAP portion of the program due to this change, but it could also lengthen the completion of AMP for other platforms.

The C-130 AMP Test and Evaluation Master Plan was approved by DOT&E in September 2002. An update is required for submittal in FY04 due to program funding changes that will impact the currently planned test schedule.